

USER MANUAL

# Flanger BL-20

**ARTURIA**

\_The sound explorers

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# Thank you for purchasing Arturia's Flanger BL-20!

This manual covers the features and operation of the Flanger BL-20.

**Be sure to register your software as soon as possible!** When you purchased Flanger BL-20 you were sent a serial number and an unlock code by e-mail. These are required during the online registration process.

## Special Messages

### Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications or features without notice or obligation.

### IMPORTANT:

The software, when used in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable.

If you experience any hearing loss or ringing in the ears, you should consult an audiologist.

# Introduction

## Congratulations on your purchase of Arturia's Flanger BL-2O!

Arturia's passion for synthesizers and sonic purity has given demanding musicians the best software instruments for professional audio production.

Arturia also has a growing expertise in the audio field, and in 2017 launched the [AudioFuse](#), a pro studio quality audio interface that features two proprietary DiscretePRO® microphone preamplifiers and a set of top-notch AD/DA converters. This line was recently expanded with the launch of the [AudioFuse Studio](#) and the [AudioFuse 8Pre](#). Arturia has also been busy making effect plug-ins, launching in 2018 the first Arturia effects bundle, which included the [Pre 1973](#), the [Pre TridA](#), and the [Pre V76](#).

Other bundles followed, dedicated to compressors, filters, delays, and reverbs. With the launch of these new effects, this time dedicated to modulation, Arturia consolidates its position as a leader in audio effects plug-ins.

ARTURIA has a passion for excellence and accuracy. This has led us to conduct an extensive analysis of every aspect of one of the most sought-after flanger units of the past. But, as is now a habit and a fundamental characteristic in all of our plug-ins, we didn't just model the sound and behavior of this unique unit, we also added several features that were unimaginable in the days the original was being manufactured.

Flanger BL-2O runs as a plug-in in all major formats inside your DAW.

*DISCLAIMER: All manufacturer and product names mentioned in this manual are trademarks of their respective owners, which are in no way associated or affiliated with Arturia. The trademarks of other manufacturers mentioned are used solely to identify the products of those manufacturers whose features and sound were studied during the development of this plug-in. All names of equipment inventors and manufacturers have been included for illustrative and educational purposes only and do not suggest any affiliation or endorsement of Flanger BL-2O by any equipment inventor or manufacturer.*

## The Arturia team

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# 1. WELCOME

## 1.1. What is a modulation effect?

Modulation effects work by modifying the sound in a certain way, usually by means of modulation controlled by a Low-Frequency Oscillator (LFO). For example, they can add one or more slightly delayed versions of the sound to itself, while modulating the pitch of those versions over time.

You can obtain three main effect types with modulation: chorus, flanging, and phase shifting. Of the three, chorus is perhaps the most sought-after, since it allows to create "richer" versions of the sound. The chorus effect works by mixing the audio signal with one or more delayed, pitch-modulated copies of itself. The pitch of the added voices is modulated by an LFO, which makes the overall effect similar to that of the flanger, except with longer delays and less modulation.

Flanger is an effect similar to Chorus, produced by mixing two identical signals, with one signal delayed by a small and gradually changing amount of time and modulated through an LFO, which produces a characteristic undulating (sweeping) effect, but with a sound resembling the result of a comb filtering. Speeding up the LFO accentuates the modulation effect. As we said, the effect is similar to Chorus, but here you use shorter delays for the delayed signal.

The flanger effect can be controlled by other sources than the LFO. For example, the unit which is modeled here allows control by means of an envelope follower and also manually.

Also, part of the signal is usually fed-back into the input, producing a resonance effect. The phase of the feedback signal can also be inverted to achieve further variations of the flanger effect. Flangers usually make great use of feedback to receive more processing. This accentuates the notches and resonances, resulting in the harsh, metallic timbre that is one noticeable characteristic of flangers.

Beware though that the constantly oscillating comb filter can quickly become tiring to listeners. Flangers can be great as transitional effects and momentary ear candy to keep the listener's attention, but you need to be careful not to push the effect too much.

The Phaser (phase-shifter) is another modulation effect, with results somehow similar to Flanger. It is produced by splitting the audio signal into two paths, one being treated by all-pass filters, which preserve the amplitude of the original signal but alter its phase. Here, you use no delayed signal. The two paths are mixed back together after the all-pass filtering, and the frequencies that are out of phase cancel each other out, producing the phaser's characteristic "whoosh" sweeping effect.

So, the phaser works by canceling bands of frequencies to obtain the desired effect (which is something we have already observed in the flanger, by the way). No delay is used in this effect, which differentiates it from the other two.

Modulation effects can create a huge range of sonorities, and the results may be perceived as a fuller, richer sound. No wonder they have been used extensively since they appeared. Also, they have been an essential addition to almost any synthesizer since the eighties.



## 1.2. What about Flanger BL-20?

The Arturia Flanger BL-20 is part of a new set of effects, proposing three new iconic vintage modulation effect units.

The original hardware unit this emulation is based on is an English manufacturer's stereo flanger rack unit which became the "flanger of choice" for many of the world's top recording artists and prestigious recording studios after its introduction at the end of the 70s.

Among its famous users are artists such as Phil Collins, Yes, The Rolling Stones and top ranking studios like AIR Studios, RSK, Townhouse Studios, etc.

The hardware unit is based on a vintage bucket brigade circuit that creates its unique warm analog tone. That's why we felt it would go great together with the DIMENSION-D chorus.

Another reason to choose it is its versatility and depth. In fact, despite its looks, this flanger is far from being "simplistic". You have 3 different modulation sources. Besides the usual and expected LFO, you can also use a manual source or an envelope follower.

Other than that, the fact that it has 2 independent delay circuits allows for true stereo outputs even when it is fed with a mono input. The stereo outputs can even be opposed to get a 2-dimensional panning effect and stereo image shift.

But that's not all. As usual, the Arturia Flanger BL-20 comes equipped with some extra tools to allow you to go beyond what you could achieve with the original unit. Here, you get a function generator that's becoming a prominent feature in the latest Arturia plug-ins, a stereo width control, and a Hi-Pass filter.

### 1.3. Where can you use a flanger unit like this?

The flanger effect is characterized by that undulating (sweeping, wavering, swooshing) effect which is caused by the comb-filtering. This kind of effect has become something of a trademark for electric guitars. Other instruments that made the most of this effect were the clavinet and electric pianos.



So, obviously any kind of electric guitar sounds are good candidates for the use of this effect. Soling is where it may shine the most, but also riffs, especially where the notes are more sustained, can use it to enrich and give movement to the sound.

As a matter of fact, any kind of soloing instrument may take advantage of flanging every now and then, if you use the effect carefully.

Pianos (mostly electric, but also acoustic) are other good candidates to the use of flanger. You can listen to it used with great results in the track "Memories of Green" by Vangelis (this track originally appeared in the album See You Later but was also later included in the Blade Runner Soundtrack). Often, the electric piano sounds are spiced up with flanging effect.

The clavinet appeared in the 70s, and it is almost impossible to hear one recorded without a flanger or phaser. These effects are to the clavinet what the rotary speaker is to the organ.

## 2. ACTIVATION AND FIRST START

The Arturia Flanger BL-20 plug-in works on computers equipped with:

Windows 7 or later and macOS 10.10 or later.

You can use the Flanger BL-20 plug-in as an Audio Unit, AAX, VST2 or VST3 plug-in (64-bit only).



### 2.1. Activate the Arturia Flanger BL-20 license

Once the software has been installed, the next step should be to activate your license, so that you can use it without limitations.

This is a simple process which involves a different software program: the Arturia Software Center.

#### 2.1.1. The Arturia Software Center (ASC)

If you have not already installed the ASC, go to this web page:

<https://www.arturia.com/support/updates&manuals>

Look for the Arturia Software Center at the top of the page, and then download the version of the installer that you need for your system (macOS or Windows).

Follow the installation instructions and then:

- Launch the Arturia Software Center (ASC)
- Log into your Arturia account
- Scroll down to the My Products section of the ASC
- Click the Activate button

That's all there is to it!

### 2.2. Working with plug-ins

Flanger BL-20 can be used in all major digital audio workstations (DAWs), including Live, Logic, Cubase, Pro Tools and others, as it comes in all the main plug-in formats. Unlike what happens with hardware, you can load as many instances of the effect as you find useful. Flanger BL-20 has two other big advantages over hardware:

- You can automate numerous parameters using your DAW's automation system;
- Your settings and current plug-in state will become recorded in your project, and you can pick up exactly where you left off the next time you open it.

## 3. FLANGER BL-20 OVERVIEW

### 3.1. Arturia's Flanger BL-20 plug-in

Our goal was to give users the experience of a great tool from the past. But although we have worked to be faithful to the unit sound, appearance and workflow, it wouldn't be an Arturia plug-in without the addition of some extra features to enrich your user experience.



We kept the user interface's simplicity. As is usual with the effect plug-ins produced by Arturia, the Graphical User Interface (GUI) has two panels, the Main panel and the Advanced Control Panel [p.19].

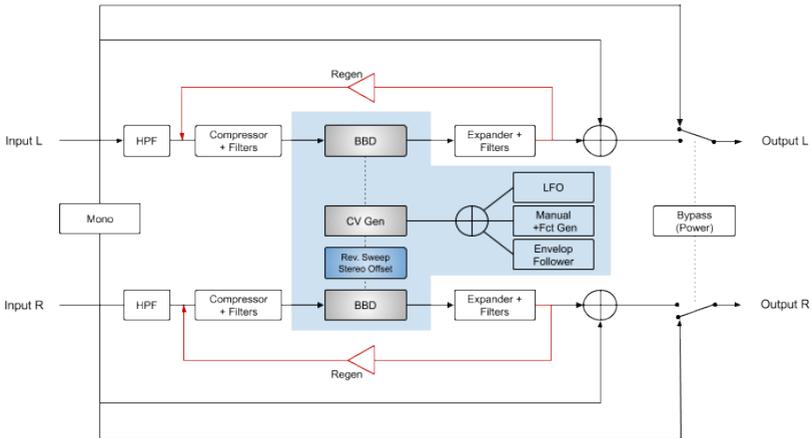
The Main panel has the main flanger controls, with just a few knobs and buttons. The original unit has a row of knobs that allow to tune the main flanger parameters. We kept this row of knobs, with one to control the mix and another to control regeneration in the left section, and five other knobs in the right section, together with a few buttons.

But we also included a few other tools, like alternative LFO shapes, a "hi-pass" filter, a Stereo Offset, and a Function Generator. These, as usual, are featured on the [Advanced Control Panel](#) [p.19].

We will take a detailed look at all of these controls and explain them in the [Control Panel chapter](#) [p.12]. Now, it's time to check out how it works and how it sounds. Let's go!

## 3.2. Understanding the Flanger BL-20 Signal Flow

The Flanger BL-20 plug-in is a stereo flanger unit. It is relatively simple, although some routings and modulations may add an extra dose of complexity and flavor to the circuit. This plug-in is an emulation of an old vintage unit, but it still offers a lot to the user, like the original units did over the years.



When the plug-in is bypassed, the input signal is routed directly to the output. This is the signal heard when you press the Power button or the Bypass button in the Lower Toolbar.

After entering the unit, the signal is split into two parts. One will be the Dry path, while the other is the Wet path that's going to be processed by the flanging circuit.

The first stage for the Wet signal is passing through a Hi-Pass Filter. This, if active, will filter out the lower regions of the sound. After this stage, the signal passes through a Compressor + Filters stage that will level the signal, preparing it for the main flanging processing.

The flanging processing is the next stage. Two BBD (Bucket-Brigade Delay) units are in charge of the short delay lines that will create the flanging (one for each channel). The Reverse Sweep or the Stereo Offset switches allow to change the phase behavior of the right channel, this way creating changes in the stereo field. For more details about these two very important controls, please refer to their respective entries in the [Control Panel chapter \[p.12\]](#).

The short delay lines may be modulated by one or all of the three modulators available: The LFO, the Manual/Function Generator, and the Envelope Follower. These may be summed as modulation sources, therefore there's a mixer to sum the three signals.

After the flanger core effect, the signal is passed through an Expander + Filters circuit that will restore the dynamics lost in the previous (Compressor + Filters) stage. After this, the Regen (feedback) control allows you to re-inject (feed back) some signal into the flanging circuit.

The Wet signal is then routed through a mix (again one for each of the stereo channels) where it is mixed back with the Dry path that was split after the signal entered the effect unit. The final mixed signal will then be routed to the plug-in Output.

This is the complete signal flow of the Flanger BL-20. Study the circuit, spend some time with the controls, and we're sure you'll gain a deep understanding of how this flanger processor works. The following section will definitely give you some help.

## 3.3. Getting hands-on with Flanger BL-20

### 3.3.1. Flanger Basics

To get an idea of the Flanger BL-20's capabilities, we suggest you try the following:

- Load a stereo clip into an audio track in your DAW (vocal tracks, guitar tracks or some keyboard licks are ideal for this);
- Load an instance of Flanger BL-20 as an insert in that track. Alternatively, you can create an auxiliary channel where you load the effect and route your dry signal to that channel. Open the Flanger BL-20 window;
- Ensure the Default preset is loaded. This means that all settings are at their initial values;
- Begin playback. You'll notice a slightly flanged modulation on the sound;
- Your flanging effect is in Auto mode, which means it is being controlled by the LFO. You have other options, but for now we'll keep using Auto. Notice that the Rate knob is at the center position, and the little black button with a musical symbol (eighth note, or quaver) is Off. This means that the LFO is running freely. Let's synchronize it to the music. Click the small "eighth note" black button, and then turn the knob until the label on the right reads 2. The LFO is now running in sync with the music, and each waveform cycle lasts the duration of two whole notes. You may try 1, which means one whole note, or a full 4/4 bar. The faster the LFO frequency, the more audible the effect. You can check the LFO speed by looking at the movement of the LEDs over the three Control Mode buttons;
- Now let's try the manual mode. This will allow you to use the Function Generator (we will see that later). Press the Manual button to select manual mode, and the Auto button to deselect that mode;
- Now play the track again. This time, you will turn the Manual knob. By default, it is at 50%. Turn it up to 100% and then turn it back slowly until you reach 0%. Notice how the flanging effect fades. You can also try the Mix knob, located in the upper left part of the Main panel. Turn it up and down, to vary the balance between the dry and wet signals;
- The Regen knob controls the feedback amount. Feedback is very important for the flanging effect. By default, that knob is at 50%. Again, try other values, and check the effect of feedback on the overall sound;
- Now that you have tried the Auto mode and the Manual mode, it's time to try the Env mode. Once again, click the Manual button to deselect it, and click the Env button to select that mode;
- Env stands for Envelope Follower. In practice, it means that the flanging effect will be controlled by the volume contour of a sound. You can select an Internal or External source. If you know how to deal with side-chain configurations in your DAW, you can select another track to control the effect. In that case, you should press the button to select "Ext Env" (the LED over it will light up). If not, you will control it with the audio that's being processed, by leaving the button at its default "Int Env" position;
- Now, let's play again. This time, the relevant controls are the ones under ENV, which means Threshold and Decay. Threshold sets the gain of the input signal, and so behaves like a modulation intensity control. As the value increases, the original audio volume brings more flanging to the sound. Decay controls the time it takes to fade the effect;



- Now that you have tried the three control modes, it's time to get a little wilder. Flanging BL-20 has some unusual controls that can perform quite interesting roles. Mono, when pressed, sums the Right and Left input signals (both Dry and Wet paths) so the whole plug-in will work on a Mono source. There's little else to say about it. But two other buttons deserve mention. One is right after Mono, and is labeled "Zero Cr". The other is the last one at the right end of the Main panel, and is labeled "Reverse Sweep O/P 2". The latter has an effect even if Mono is pressed. For now, let's put the Flanger BL-20 in Auto mode (activate the AUTO button and deactivate the ENV button), and play your clip again;
- While it plays, press the Zero CR button. The red LED above it will light up. You will notice that the stereo image expands. Usually, the delayed (flanging) signal is summed to the dry signal, creating the expected peaks and troughs that are the result of comb filtering. This button inverts the polarity of the Wet signal and delays the Dry signal, this way creating phase cancellations, hence more comb filtering. This increases the depth of the flanging effect;
- Now, it's time to try the Reverse Sweep button. Press the Zero Cr button to turn it Off, and press the Reverse Sweep button to turn it On. The bright green LED above it will light up. Now put Rate in unsync mode (the small black button has to be off), and turn the knob all the way to the left. Turn the Depth knob all the way to the right. When you hit play, you will notice the signal slowly "floating" from one channel to the other. This reverse sweep causes stereo widening, and will be more noticeable with a sustained sound, like a synth pad;
- And that's pretty much it as far as the controls present on the Main panel are concerned. As we showed, this effects unit has more than you could imagine at first sight. But we're not done yet. Please read below;

### 3.3.2. Advanced methods of using the flanger

Now that you have a feeling for the Flanger BL-20 main controls, let's go deeper into flanging:

- Click the double downward facing arrows to open the "Advanced" panel;
- This panel has some extra options - from left to right, you have a Hi-Pass Filter, a Function Generator, an LFO shape selector (labeled Auto Shape, because the LFO is only in action when you select the Auto mode), and the Stereo Offset, which changes the behavior of the Stereo;
- For now let's focus on the Hi-Pass filter. Let's say you want to process a bass guitar line, but you want your bass to sound firm and steady. You may achieve that by leaving the lows unprocessed. That's where the Hi-Pass filter comes in. This filter will cut all the frequencies below the cutoff point in the Wet signal path, which means those will be left out of the flanging. Only the frequencies above the cutoff point will be processed;
- Next comes the Function Generator. This is more complex. The FG works together with the Manual button. The values of both controls are mixed (Function Generator can sum or subtract to the Manual value). Anyway, for the FG to have a better effect on the audio, the Manual knob should be around 50%;
- Press the Manual button in the Main panel, and put the Manual knob at a value around 30%. Now, press the "Add To Manual" button of the Function Generator. Notice that the graphic display window becomes brighter;
- Now you need to draw a function. Let's try a kind of simple Attack-Decay envelope. Click the FG line more or less at the end of the first quarter space (there is a soft vertical line a little thicker at that point). You may click the magneto icon in the lower part of the FG window to be sure that the node created is exactly at that point;
- Now raise that node up to the top of the graphic display. You'll have now the aimed Attack-Decay as an envelope contour. Since the FG is in a constant loop, the envelope will restart every time it reaches the end. Therefore, it's better to use it in sync with the music. That's why Sync is the default behavior;
- Hit play. The flanger effect will follow the envelope contour, but will not be very noticeable. It is also very slow. First, change the sync value to 1 (by default it is 8t, which means eight whole-note triplets). 1 means a whole-note (a full 4/4 bar), which is a value more suitable to what you want;
- Now raise the Amount to 0.700. This value will add to the Manual knob value, which means that, when the envelope is at the top, we will almost reach maximum delay time. Hit play and listen. Adjust the values to what best suits your musicality. Remember that you can also use negative values, in which case the Function Generator will subtract to the Manual value;



*Flanger BL-20 after playing with the Regen feature a few times. We also have pressed the three Control Mode buttons, the External Envelope button and the Reverse Sweep button to show some extra options, although so far, we have only used a single mode at a time. The selected waveform in the Auto Shape is the square, which we found great for getting stereo ping-pong effects.*

- Now, it's time to have some fun. Create a few more nodes in the FG line. Now, click the dice icon and drag the mouse up. You will get a random function. Perform this operation a few more times, until you get a contour that you think is good. Now hit play again. You can keep playing dice for as long as you want;
- Time to check some different LFO waveforms. Go to the Main panel again, click the Manual button to turn it off and click the Auto button to turn it On. You are in Auto mode again. Since we are going to try different waveforms, it's better to put the Rate knob in sync. Click the small musical note button to turn Sync On. The button will light up. Turn the Rate knob until the value box that pops up shows 1. Turn Depth all the way to the right to get the maximum value. Hit play one more time;
- Now, while the music is playing, click the Auto Shape button. You will notice that the flanger effect changes noticeably with each waveform. The original unit only had a triangle waveform, but here you have several others, and each one works differently. Some results may be more suitable than others. Listen carefully. Remember to always check this when you decide to use Auto mode with this flanger;
- Finally, it's time to check the Stereo Offset. This changes the stereo image, by offsetting one of the channels from -100% to +100% according to the knob value. Try it and check the effect. You may even try it with each of the waveforms, and you'll notice that the Offset reacts differently. That's because the result depends very much on the stereo image it begins with.

These are just some examples of what you can do with Flanger BL-20. Despite looking simple, it offers much more than you could imagine, especially when tools like Zero Crossing, the different modes combined or the ones in the Advanced panel come into action. As always, use your imagination, and try to find other creative and interesting ways of using the tool.

## 4. FLANGER BL-20 CONTROL PANEL

The Flanger BL-20 plug-in can be used in Mono, Stereo or Mono-to-Stereo configurations, independently of the source material.

The Mono configuration is automatically loaded when you use the plug-in with mono tracks. When inserted in stereo tracks, the Stereo configuration is automatically loaded as well. When the plug-in is instantiated as Mono-to-Stereo, as in Pro Tools for example, there is also a different configuration.

Nevertheless, when instantiated in stereo tracks, you can change the desired configuration by pressing the Mono/Stereo button, located on the left side of the Main Control Panel, right after the Power button. By default, this button is on Stereo Mode, but you can "monoize" the source signal by selecting the "Mono" mode.

**i**: Not all DAWs are able to work with mono tracks, in which case you will not be able to use the mono configuration. The same applies to the mono-to-stereo configuration.

### 4.1. Channel Configuration (Mono/Stereo/Mono-to-Stereo)

The difference between the different configurations consists in the following:

When instantiated in stereo channels, the plug-in loads in full mode, featuring the Mono/Stereo button and the Reverse Sweep O/P 2 switch in the Main panel and the Stereo Offset control in the Advanced panel.

When instantiated in mono channels, the plug-in doesn't have these three controls, since they only act on stereo signals.



When instantiated as mono-to-stereo, you have the Stereo Offset control and the Reverse Sweep O/P 2 switch, but the Mono/Stereo button is not present, since the source signal is mono. Bear in mind that, when used with mono sources in the mono-to-stereo configuration, the source signal remains mono, but the processed signal will have some stereo definition and depth, hence the presence of the other two controls.

## 4.2. Main Control Panel

The Flanger BL-20 Graphical User Interface is very simple, as it follows the original unit's control panel, which was also very simple. The Main control panel is where the main flanger controls are located, and is the one that opens by default when you launch the plug-in.

But Arturia included some extra modulation features. These are located on a second panel, the Advanced control panel, which opens when you click the double arrow button (the Advanced Mode button) in the Upper Toolbar.

As is the case with the previous effects bundles, as well as with all current Arturia plug-ins, this GUI also has an Upper Toolbar and a Lower Toolbar. The Lower Toolbar is very important for the use of the Arturia plug-ins, as it features the Undo and Redo functions, lists the editing history, has a Panic button to prevent damage in case of audio accidents, allows you to put the plug-in in Bypass (which doubles the Power button on the Main control panel), and measures CPU consumption.

The Upper Toolbar is where you access the main menus, perform important tasks such as loading and saving presets and banks of presets, and where you can select a preset and see the name of the preset currently in use. The toolbars and their features are covered in detail in the [User Interface chapter \[p.23\]](#).

We will now have a look at all the controls available, explaining what they do, what their ranges are and how to interpret the numbers.



Notice that each time you click a control (knob or button), or simply hover the mouse over it, the Lower Toolbar displays the parameter name at the lower left. Also, a small pop-up box appears to the right of the control displaying the current parameter value. This changes every time you move that control, updating the parameter value in real time.

Now, let's take a look at each control on the Main Control Panel.

### 4.2.1. Power

The Power button turns the plug-in on and off. In practice, it works as a bypass button (when turned Off), and has the exact same effect as clicking Bypass in the Lower Toolbar. By default it is On, obviously.

### 4.2.2. Mono/Stereo

This switch has two positions: Stereo and Mono. When in Stereo, you have full stereo processing. When in Mono, the source signal is "monoized" (Left and Right inputs are summed before processing).



The Mono/Stereo switch is absent when the plug-in is instantiated in mono channels, either as mono or mono-to-stereo, since there is no stereo signal to start with.

By default, the switch is in the Stereo position.



### 4.2.3. Zero Cr.

This button/switch activates the "Zero Crossing Mode". This is a mode which didn't exist in the original unit.

When activated, it inverts the polarity of the modulated signal and delays the dry signal of the mean delay curve, so that you have this specific zero crossing effect. The resulting effect is an increase in the undulating characteristic of the sound.

Usually, flanging is additive. This means that the delayed signal is summed to the dry signal, creating the expected peaks and troughs that are the result of comb filtering.

But what happens if you subtract the modulated signal, instead of adding it? Subtractive flanging is pretty similar to additive flanging. It has to, since you are still combining two waveforms, except that the modulated waveform is 180 degrees out of phase. This means that there will probably be more cancellations, hence more comb filtering.

Well, let's just say that the result will still be a flanger effect, but a little stronger. You may prefer it thicker, wetter, etc. Better try it and listen for yourself how it sounds. To subtract, you need to invert the modulated wave - that's what the Zero Crossing button is there for.

By default Zero Crossing is off.

#### 4.2.4. Mix

Mix controls the amount of modulated signal versus dry signal. It also changes the way the final sound behaves. At 50% (the default position, labeled as Doppler) you will notice a strong presence of the "whooshing" and "undulation" that are the main characteristics associated with the flanger effect. At 100%, the delayed signal takes over, and the Flanger can be used in a send track.



#### 4.2.5. Regen

Regen(erator) is a control for the feedback amount. This is where you control how much of the delayed signal is reinjected into the audio circuit.

Feedback is very important since it allows to increase the characteristic comb-filter effect. This effect occurs because the delayed signal that is combined with the original dry signal was modulated by the LFO, therefore changing the phase relations. The resulting combination will produce some peaks and troughs in the sound, which graphically may resemble a comb (hence the name "comb filter"). This filtering effect is a very important part of the flanger "sound" we are all used to.

## 4.2.6. Control Mode

Control Mode is very important for the overall behavior of this effect unit. The main section of this control has three switches: Manual, Env (Envelope Follower), and Auto. These can be combined together. This means you can use each one of the modes, two of them combined, or ALL OF THEM combined. The resulting modulation will be the sum of each modulation source.

Above the buttons, you have a row of "LED lights" that will show the combined "movement" of the effect, depending on the way the different controls act on the modulation.

By default, only the Auto switch is On. This is the mode where the flanger effect is automatically controlled by the internal LFO. By default, the LFO shape is a triangle wave, but this can be changed as well, as you will see below. By pressing the other two buttons, you activate the other modes. Each activated mode adds itself to the sound.



## 4.2.7. Manual

When this button is switched On, delay time is controlled with the Manual knob. It can also be controlled by a function set in the Function Generator, when the "Add To Manual" button is switched On.

In this case, the function applies unipolar modulation on delay time, which is summed with the Manual knob's value.

The Manual control knob is a single knob, with intensity measured in percentage, from 0% to 100%. By default, it is positioned at 50%.

Beware that, if the Manual knob value is too high and you choose positive values for the Function Generator Amount, or too low and you choose negative values for the Function Generator Amount, there will be little space for the Function Generator to work. FG amount adds to the Manual knob amount - both values will be summed. If you intend to also use the FG, it's better to start with the Manual knob at 50%, and then choose what to do.

### 4.2.8. FCT

FCT is a "LED" indicator positioned above the Manual control knob that lights up when the Function Generator is modulating the Manual control. This allows you to know when the Function Generator is actually having an effect on the chain, since it is always running, whether it is being used or not.



### 4.2.9. Env

ENV is an audio envelope follower. As such, it reacts to audio level, and that way changes flanger intensity.

You have three controls for the Envelope Follower. The first is a Threshold knob, which controls the way the audio affects the intensity of the Flanger. By default it is positioned at 5 dB. Range goes from -15 dB up to 30 dB.

The second is a Decay knob, which controls the amount of time the envelope takes to reach zero after being deactivated. By default it is at the Fast position, which means that the control decays fast.

The third control is the "Int Env/Ext Env" switch, which allows to select between Internal or External (side-chain) audio source.

When the button is Off, the internal audio source (the audio that's going to be processed) is also the source for the envelope follower. When the button is On (indicated by the small LED over the button), the Envelope Follower will use any external signal that is routed to the plug-in. This is commonly known as side-chain.

## 4.2.10. Auto

Auto is when the flanger is controlled by the LFO (the most common way to control a flanger effect). Rate and Depth knobs act the same way they do in a classic LFO.

In this section you have two controls. Rate, as usual, controls the frequency (speed) of the LFO, while Depth controls the amplitude, and therefore the amount of induced modulation. Rate can also be synced to musical values, which can be handy if you want the Flanger to act in sync with the music.



Remember: These 3 modes can be summed when enabled together.



### 4.2.11. Reverse Sweep O/P 2

This button reverses the sweep on the right channel. So for example if the sweep goes up on the left channel (a->b), it will go down on the right channel (b->a). This will have an impact on the stereo image of the processed sound, as well as on the resulting effect.

You can better hear what this does by processing a stereo sine signal in Auto mode with a slow rate. You'll hear how the sound "floats" from one channel to the other as the result of the 2 sweeps moving in opposite directions.

## 4.3. Advanced Mode Control Panel

The Advanced Mode Control Panel is accessed by clicking the Advanced Mode (double arrow) button in the Upper Toolbar. These are very important additions that bring a lot of extra power and flexibility to the processor.

In the case of Flanger BL-20, this panel features a Hi-Pass Filter, a Function Generator, the Auto Shape control - which allows to choose among several different LFO waveforms - and the Stereo Offset (a kind of stereo width control).



### 4.3.1. Hi-Pass Filter

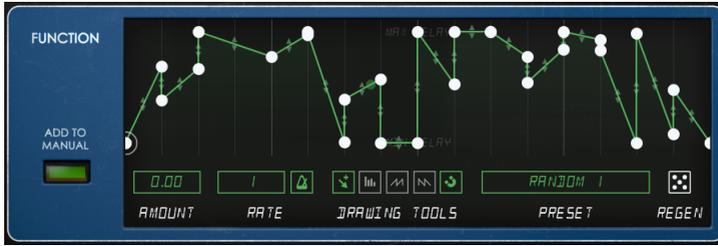
This is a 12dB/oct high-pass filter. When you're modulating an audio track with a chorus/flanger/phaser, you may not want your low end to modulate (like for example if you want to keep your bass and kick drum steady and precise). That's where the Hi-Pass Filter plays a role. By filtering out the low regions of the sound at the input of the unit, only the high frequencies will be modulated.

By default, the filter is Off.



### 4.3.2. Function Generator

This control changes the original behavior of the manual mode for the flanger effect.



The Function Generator is a very flexible control. First featured in [Pigments](#), function generators were then incorporated into other Arturia products, like for example the recently launched [OB-Xa V](#) synth, and now the Flanger BL-20.

This control can act like a step or pattern sequencer, an envelope, an LFO, or anything in between. The FG present in the BL-20 is unipolar, which means it only works in the positive axis (above zero), but nevertheless, since you can use positive and negative values on the Amount, you can add or subtract to the Manual value.

The Function Generator offers a very powerful and flexible way of manually controlling the flanger effect, in alternative or in addition to the LFO and/or the Envelope Follower.

The Add To Manual button enables (activates) the Function Generator. The FG is always running but it only has an impact on your sound when this button is pressed, and the Manual button in the Control section of the Main panel is On.

**i** The Function Generator values will be summed (algebraic sum) to the Manual knob values. Therefore, for the Function Generator effect to be audible, you'll need to take into account the value of the Manual control. Leave the Manual knob value under 50% to be sure that the Function Generator has enough headroom to work, if you want to use positive values, and use higher values in the Manual if you want to use negative values for the FG Amount.

The active function is displayed in the main part of the window. Below the function shape graphic display are several buttons that play a very important role in the creation and editing of function shapes.

The Amount control (modulation amount) which, by default, is set to the neutral 0.00 value, is the first of these buttons. It goes from -1.00 to 1.00 (it works with both positive and negative values). The Function Generator, when active, performs an algebraic sum to the Manual control value. When using positive values, it will add its values to the (fixed) Manual value. When using negative values, the Function Generator will subtract from that same Manual value. That's why you say the Function Generator performs an "algebraic sum" on the Manual setting. The Amount value controls the intensity of the Function Generator modulation on the Manual delay parameter.

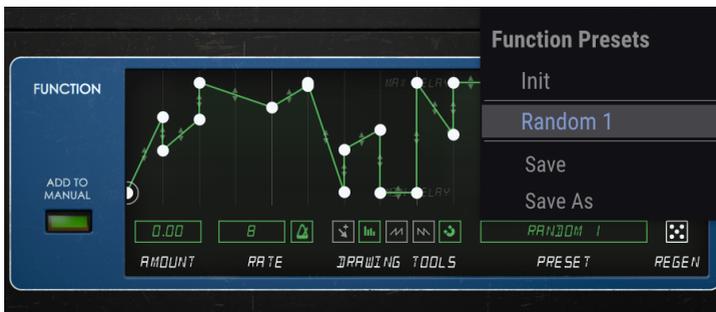
The Function Generator rate can be set freely, in which case the Rate control is expressed in Hz (ranging from 0.100 Hz to 10.0 Hz) or in sync with the music (by pressing the "metronome" button), in which case the Rate is expressed in musical values. When running in sync with the music, the range goes from 8 (8 whole-notes or eight 4/4 bars) up to 1/64 (a 64th note). By default, it is set to 8 (8 whole-notes) when in sync, or 1.91 Hz when running free. Whatever mode it is (sync or free), the Function Generator runs continuously.



The Drawing Tools section has a manual button (the small arrow at the left). With it you can freely draw your own function, by creating nodes and defining curve shapes for the different segments. To create new nodes, simply click over the line. To change the shape of the segment, click and drag the handle that's in the middle of each segment.

There are also three quick draw functions that may be used instead. With them, you can quickly draw some automated curves. Finally, you have a "magnetize" feature (the button at the right of the row, with the little magnet icon) which allows to quickly position the nodes at exact positions inside a grid.

The Function Generator is capable of complex shapes (as we said, you may even use it as a very complex pattern/step sequencer), and it can be very difficult to reproduce them, not to mention time-consuming. That's why the Function Generator has its own preset library, where you can save your own functions for later use, or load previously stored function shapes.



*The Preset menu of the Function generator, showing the saved function shapes.*

Last but not least, a randomizer (the dice symbol, labeled Regen, positioned at the right end), allows you to randomly change the selected Function. By clicking and dragging over the Regen button (the small "dice") several times in a row, you can obtain quite interesting function curves.

When the Add To Manual button is pressed, the FCT indicator LED that's positioned over the Manual knob in the Main panel turns on, to indicate that the Function Generator is modulating the Manual setting.

The Function Generator window is also dimmed when the Add To Manual button is off, which is another visual clue to tell you that it isn't actually having an effect on the audio. As soon as you turn that button on, the window becomes brighter.

**i** Remember: Although it is always running, the Function Generator only has an impact on the sound when the Add To Manual button is pressed, and the Manual button in the Control Mode section is On.

### 4.3.3. Auto Shape

This section presents a column of buttons with several alternative waveforms for the modulation LFO (Auto). The original unit's LFO only featured a triangle waveform.

Here, you have the possibility to select that very same triangle waveform (the "ORIG" button, which is the default option), but also a Sine, a Square, a Ramp (ascending saw wave), and a descending Saw. These alternative LFO waveforms allow you to obtain effects that were not possible with the original unit.



### 4.3.4. Stereo Offset

Stereo Offset is a control to change the stereo field of the processed signal. It does that by adding or subtracting (+/-) a constant control voltage (CV) offset to the right channel. The original unit had two independent delay circuits, which meant that, in fact, the signal was doubled internally (fed to the two independent circuits). The Stereo Offset acts as a mix button for the two delay circuits, with an offset (deviation) of the right channel from the left channel.

By default, this control is positioned at the center, which preserves a stereo image similar to the original (it doesn't add any offset). Value range from -100% (left position) where the right channel has a corresponding -100% offset from the left channel, to 100%, where the right channel has an offset of 100% from the left channel.

Depending on the source material's original stereo image, this can create very different results.

Also, you should note that the Stereo Offset effect will be noticeable even when working on mono signals. Then, even if you have pressed the Mono/Stereo button, since the input signal is monoized prior to processing, the output will still be stereo. In other words: the monoized signal will be "stereoized" and therefore will be influenced by the Stereo Offset.

**i** The Stereo Offset may appear as a kind of Stereo Width control but it works differently. The results may vary, depending on the original stereo image of the dry signal. When the plug-in is instantiated in mono channels, this control will not be present.



## 5. USER INTERFACE

The Flanger BL-20 User Interface has a Main Control Panel, an Advanced Mode Control Panel, and toolbars at the top and bottom of the window.

It is still a very simple User Interface. That will always be the main focus of every Arturia product: to unleash your creativity while remaining easy to use.

We have already looked at the control panels. Now it's time to look at the toolbars.

### 5.1. The Upper Toolbar

The plug-in GUI (Graphical User Interface) has the usual Arturia toolbar that runs across the top edge, with the Arturia logo / plug-in name on the left (the colored part), followed by the Library button and the Preset name, with arrows to navigate through the different presets stored in the library.

After this, you have the button that gives access to the Advanced Mode control panel (a double arrow).

A dot is added next to this double arrow button whenever the Advanced Mode is active (i.e., when there are parameters set to non-default values) if that panel is not visible.



This upper toolbar, which is common to all current Arturia plug-ins, gives access to many important functions.

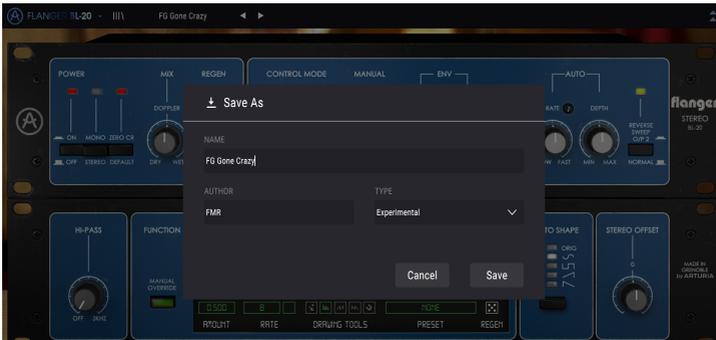
These can be found by clicking on the Arturia Flanger BL-20 button at the top left-hand corner of the plug-in window. Since these options are also common to all current Arturia plug-ins, you may already be familiar with them:

#### 5.1.1. Save Preset

This option will overwrite the active preset with any changes you have made, so if you want to keep the source preset too, use the Save As option instead. See the next section for information about this.

### 5.1.2. Save Preset As...

When you select this option, you are presented with a window where you can enter information about the preset. In addition to naming it, you can enter the Author name, and select a Type. You can even create your own Type by entering custom names in the Type field. This information can be read by the preset browser and is useful when searching for the preset later.



### 5.1.3. Import...

This command lets you import a preset file, which can be either a single preset or an entire bank of presets. Both types are stored in **.b20x** format.

After selecting this option, the default path to these files will appear in the window, but you can navigate to whichever folder you are using to store presets.

### 5.1.4. Export Menu

You can export presets in two ways: as a single preset or as a bank.

- **Export Preset:** Exporting a single preset is handy when you want to share a preset with someone else. The default path to these files will appear in the "Save" window, but you can create a folder at another location if you like. The saved preset can be reloaded with the import preset menu option.
- **Export Bank:** This option can be used to export an entire bank of presets from the plug-in, which is useful for backing up or sharing presets.

### 5.1.5. Resize Window options

The Flanger BL-20 window can be resized from 50% to 200% of its original size without any visual artifacts. On a smaller screen such as a laptop, you might want to reduce the interface size so it doesn't dominate the display. On a larger screen or a second monitor, you can increase the size to get a better view of the controls. The controls work the same at any zoom level, but they can be harder to see at the smaller magnification values, or when using high resolution monitors (like HD monitors or higher). The higher the resolution, the bigger the size you should use.

### 5.1.6. Help

The Help section in this menu allows direct access to the User Manual (the document you are reading), as well as to the FAQ (Frequently Asked Questions).

### 5.1.7. Preset Selection

The [Preset browser \[p.27\]](#) can be opened by clicking the library symbol on the toolbar. The filter, name field and left / right arrows in the toolbar all assist with preset selection.

Select a preset by clicking the preset name field in the Upper Toolbar. That action will open a list with all the presets available. The currently selected preset is marked with a ✓. Then simply place the mouse over the name of the preset you want to select (the preset name will be highlighted), and click it.

Alternatively, you may use the Preset Forward and Backward arrows (the arrows at the right of the preset name field) to navigate through all the presets.



### 5.2. Advanced Mode [Double Arrow] Button

This button opens the Advanced Mode control panel. This is where the controls are located for the extra features Arturia added to expand the possibilities regularly found on these units.

When the Advanced Mode panel is open, the arrows point up. When the panel is closed, the arrows point down.

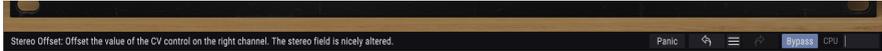
When certain parameters are active in the Advanced Mode panel (edited or set to values different from default), and that panel is closed, the double arrow button (pointing down) has a dot next to it to call your attention to those parameters. To check them, click the button to open the Advanced Mode control panel.

There's a detailed explanation of all the features in this Advanced Mode in the [Advanced Control Panel \[p.19\]](#) section of the Control Panel chapter.

## 5.3. The Lower Toolbar

When you hover the mouse over a parameter control, you will see a readout showing that parameter's name and a brief description in the left part of the lower toolbar.

Also, you will notice a small popup window at the side of the parameter control, displaying the current value of the parameter. This will also show the value changes when you move the control (edit the parameter). This is handy because you don't need to touch the parameter control to read the current value, and also you may keep looking at the parameter while you read the value changes.



At the right-hand side of the lower toolbar are several small windows and buttons. These are very important features, so let's take a closer look.

### 5.3.1. Panic

The Panic button, when pressed, turns off the audio to stop any stuck sound, this way preventing damage to your ears or speakers.

### 5.3.2. Undo

The Undo button is a curved arrow pointing to the left. This button reverts the last edit you performed. If it is clicked repeatedly it will revert the parameter changes in the order they were performed in the session, from the latest ones to the earliest ones.

### 5.3.3. History

This button lists all the parameter changes performed in the current session.



### 5.3.4. Redo

The Redo button is a curved arrow pointing to the right. This button works exactly the opposite way of the Undo button. It will reinstate the last undone edit. If it is clicked repeatedly it will reinstate the parameter changes in the order they were undone (the latest undone ones first).

### 5.3.5. Bypass

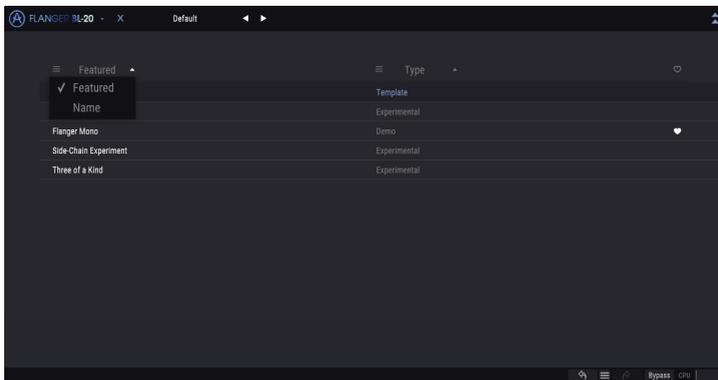
This one is obvious. Activating the bypass option will completely disable the Flanger BL-20 plug-in. This action may also be performed by the Power switch.

### 5.3.6. CPU meter

The CPU meter is used to monitor how much of your computer's CPU is being used by the plug-in. If you stress your computer too much, the global performance of your system and the audio may suffer.

## 5.4. The Preset browser

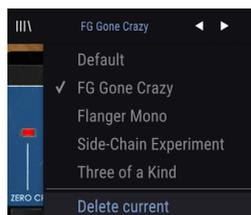
The preset browser enables you to search, load and manage preset configurations in Flanger BL-20. Although this looks like and is based on the usual Arturia Preset Browser, it is simpler, and even easier to work with. You access the preset browser by clicking on the library symbol next to the Arturia logo/plugin name on the left.



When you click on the library symbol, you will see a screen with all the Presets you have saved. You can sort the list by several different criteria to make it easier to find the right preset. There are two columns: The first one can list the Presets by Name or by "Featured". The Featured presets were selected as important by Arturia. The second one lists the Presets by Type or by Designer.

There is only one attribute visible, which is the one you select by clicking the column title. Type is the default attribute. When you select the Designer attribute, the list changes and that attribute replaces the Type field in the second column.

If you want to delete a preset, first select it in the browser list. Next, click in the name field at the top to open the list of presets. Then choose the option "Delete current" at the bottom of the list, and confirm the action in the pop-up window.



## 5.5. Fine-tuning parameters

Typically, to change values in the plug-in controls, just click on the corresponding control and drag the mouse up or down. If the controls are switches, simply click them to toggle On or Off.

If you want finer editing values, you can use Ctrl+Drag (Cmd+Drag for macOS). Alternatively, you can Right-Click and Drag. With this technique the values change more slowly, which enables you to edit them with greater precision.

## 5.6. Resetting your controls

Double-clicking a control changes it automatically to the default value.

And that's it. We have just finished describing all the controls you have at your disposal to process sound in your DAW using the Flanger BL-20 plug-in. We hope you'll enjoy your new plug-in (and the results you get with it!) as much as we enjoyed making it.

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